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UNITED STATES GOVERNMENT MEMORANDUM

Department of Agriculture  
Forest Service  
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Date: April 11, 1963

To : R. M. DeNio, Director, Division of Range Management  
From : F. J. Smith, Chairman, Range Seeding Equipment Committee  
Subject: Improvements

There follows a report of the Seventeenth Annual Meeting of the Range Seeding Equipment Committee, held at the Sheraton-Johnson Hotel, Rapid City, South Dakota, on February 10-11, 1963; a copy of each written report submitted is attached to the original of this report.

The proceedings of the meeting are arranged in the following order:

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*Frank J. Smith*

REPORT OF THE SEVENTEENTH ANNUAL MEETING OF THE  
RANGE SEEDING EQUIPMENT COMMITTEE

Rapid City, South Dakota  
February 10-11, 1963

The Seventeenth Annual Meeting of the Range Seeding Equipment Committee was called to order by General Chairman Frank J. Smith at 9:00 A.M., February 10, 1963, at the Sheraton-Johnson Hotel, Rapid City, South Dakota. The registered attendance totaled 58 persons, representing Federal and State agencies, colleges, and others from all parts of the United States interested in equipment development.

The proposed program, which was submitted to all interested persons prior to the meeting, was followed very much in the order as presented. The following are summary reports of papers presented at the meeting. A complete copy of the full report submitted is attached to the original of this report.

Evaluation of Pipe Laying Machinery.

Acting Subcommittee Chairman - Robert Anderson

Four different pipe laying machinery proposals were suggested to members of the Committee. The proposals varied all the way from the simple, inexpensive adaptation of a spring tooth which costs about \$60 to a special attachment designed for use with a LeTourneau Rooter which costs about \$3200.

Two of the machine proposals appear to warrant further study and consideration.

Primary design problems appear to be (1) radius of the feeder tube, and (2) reel capacity. The work plan for this Committee suggested a reel capacity of 2600'. This appears to be an unrealistic goal. The largest present reel capacity of any of the machines is 600'.

Data was gathered on the costs of 24 pipeline projects in Utah to serve as a guide to possible economies which could be expected from use of a pipe laying machine. Though the data is not an adequate sample analysis, it seems to indicate that substantial savings can be expected. Following is a comparison of several characteristics for the five machines ordered.



## COMPARISON OF MACHINE PROPOSALS

| Item                                                  | *Machine<br>Proposal "A"                                                | **Machine<br>Proposal "B" |                                                       | ***Machine<br>Proposal "C"                         | ****Machine<br>Proposal "D"                                         |
|-------------------------------------------------------|-------------------------------------------------------------------------|---------------------------|-------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------|
|                                                       |                                                                         | Model "800"               | Model #1                                              |                                                    |                                                                     |
| Number of Ft.<br>Present Reel<br>Capacity             | 300'; being<br>adapted for<br>500'                                      | Not Known                 | Not Known                                             | None used. F.S.<br>believes one<br>could be devlp. | 600' or $\frac{1}{4}$ "-1 $\frac{1}{2}$ "<br>Max. would be<br>1000' |
| Minimum-Maximum<br>Depth to which<br>pipe can be laid | Averages<br>12"                                                         | 18" to 24"                | 18" to 31"                                            | 12" maximum                                        | 0" - 30"                                                            |
| Basic cost                                            | \$152.13                                                                | \$279.90                  | \$1210.00                                             | \$62.52                                            | \$3000.00<br>(\$200 for attach.)                                    |
| Difficulties<br>Encountered in<br>Use                 |                                                                         | None                      | None                                                  | Breaking Plas-<br>tic Connectors                   | Breaking<br>Fittings                                                |
| Suggested Design<br>Modifications                     | Design for<br>Larger Reel<br>Cap; Dev.ft.<br>for 1 $\frac{1}{2}$ " pipe | None<br>Reported          | Possible<br>Reinforc-<br>ing for<br>Heavy Duty<br>Use | Design Reel<br>to be Used                          | Increase Reel<br>Capacity; Change<br>in Radius of<br>Feeder Tube    |

\*Attachment to Cat 12 Motor Grader

\*\*Adaptation of Model 800 Jayhawk Soil Saver or Model #1 Jayhawk Soil Saver

\*\*\*Adaptation of Heavy Duty Spring Tooth attached to Wheel Tractor

\*\*\*\*Adaptation of LeTourneau Rooter #1275

Subcommittee recommendations are:

1. Further data should be gathered on the Jayhawk Soil Saver Model #1, particularly as to whether it is adaptable to working in rocky soils. It is also not clear whether this machine can be pulled by wheel-tractor. This should be ascertained. This recommendation is based on the cost of this machine relative to the cost of adapting a road-ripper - a difference of some \$1800. If Model #1 will withstand use in rocky soils, it certainly would be a cheaper alternative.
2. Further study of machine proposals (see the above table) might be profitable. It seems reasonable to assume that enough pipelines are and will be constructed in relatively deep, rock-free soils to warrant design and construction of light-weight machine which can be used under such conditions with substantial savings resulting from low initial cost and probably lower operating costs. Let's not swat flies with a nuclear device.
3. A critical design factor appears to be the radius of the tubes in which the pipe is fitted. This seems to be a cause of breakage of pipe fittings. Further study of this seems warranted.

Evaluation Report on Available Commercial Equipment and Recommended Improvements for Fence Building Equipment.

Subcommittee Chairman - Orval Winkler

The Fury Fencer constructed by the United States Steel Company was the only machine tested. This test was made with a John Deere wheel tractor. Committee advised that the "30-10" tractor was a better unit to handle the fencer and that in rough going, such as would be encountered on rangelands, a crawler tractor of D-2 capacity equipped with a three-point hitch, was a very satisfactory power unit.

The Committee noted that it is difficult to maneuver the fencing machine into position, and in many cases where this is the case, it would be faster to drive the post by hand.

On an all-steel post fence line it is not recommended that the posts be set on a true line - the thought being that steel posts act as springs with the expansion and contraction of the fence. This is not true where wooden posts are used. Wooden posts should be set on a true line. There is now a commercial all-steel assembly for corners. To expedite work, there are also nico-press splices for splicing the wire. Forty-rod rolls of wire should be used to reduce splicing time.

Wooden posts cannot be satisfactorily driven in gravelly or sandy soil. They will not set up solid in these soil types. It was determined that to most effectively use the machine, the bracing and guide wire should be laid out ahead of machine; this was done on a one-mile section. A one-pass operation was employed in the test. It was found that steel posts and wood posts frequently could not be driven by the machine in rocky areas. To compensate for these areas, it was decided to hand-dig these post holes by adding a two-man crew. This addition was not offset by the increased production of the machine.

The Committee recommended that:

1. The three-man crew is the most effective.
2. The wheel-type tractor could not hold the machine on slopes; the weight of the machine caused the front end of the tractor to float. The use of a D-4 caterpillar or equivalent could overcome this difficulty.
3. The use of wood posts for bracing or line posts caused a considerable reduction in the effectiveness of the machine. There are several prefabricated steel corner and brace assemblies that can be installed with this machine. The all-steel fence will facilitate the most effective use of this machine.
4. There are several small tools and devices that can be used by hand methods as well as with the fencing machine. In the case of using them with the machine, they are effective timesavers. The nico-

press sleeve for splicing wire enables the spliced area to feed freely through the guide wheels on the wire dispensing equipment. The American Steel wire fasteners are easier to install and cannot be put on loose.

The following is a chart showing comparative cost using the Fury Fencer as against the trained, efficient crew:

Fury Fencer Operating Costs per Rod

|                             |                |
|-----------------------------|----------------|
| Fencing machine             | \$ .05 per rod |
| Tractor                     | .40 " "        |
| Truck                       | .03 " "        |
| Labor (3 men @ \$3 per hr.) | .75 " "        |
| Total                       | \$1.23 " "     |

Hand Method Operating Costs per Rod

|                             |                |
|-----------------------------|----------------|
| Danuser post driver         | \$ .01 per rod |
| Truck                       | .05 " "        |
| Labor (4 men @ \$3 per hr.) | 1.20 " "       |
| Total                       | \$1.26 " "     |

Comments from the floor indicated that the above figures may not be applicable in all areas, and considering the normal type of fence crew, savings of 2 to 1 were reported in the floor discussion.

Evaluation Report on Root Plows and Recommended Improvements.

Subcommittee Chairman - C. S. Fonte

This report is a follow-up of the report made at the previous year's meeting, and included additional projects where root plows were used. Projects involving the root plow included vegetative types from the desert shrub to the gambel oak areas. Species which have been controlled are creosote bush, cholla, cactus, mesquite, tarbush, sagebrush, rabbitbrush, willows, wild rose, serviceberry, greasewood, gambel oak, pinon pine, juniper and others. The cost per acre has ranged from \$5.00 per acre on light stands of sage and rabbitbrush to \$50.00 per acre on the heavy oak stands.

The Forest Service experience in the Southwest indicates (1) should not plow light, sandy soils when they are moist, (2) operate root plow on the contour, or at best, across the slope. Severe gullying and washing has occurred by operating up and down the slope.

The Rocky Mountain Region uses its plow in gambel oak. This was primarily for site preparation in timber planting. Costs are \$25-\$30 per acre for plowing and raking in light brush, and about \$50 per acre in heavy brush. Costs may be acceptable for timber site preparation, but are questionable for range site preparation. Root plowing is not recommended in oak brush for range improvement purposes.



BLM in New Mexico reports comparisons between brush kills and establishment of new grass stands between the "Fleco" root plow and use of herbicides. The cost per acre ranged from \$6 to \$12 for root plowing; \$3 per acre for aerial spraying, and only 75¢ when treated with a brush chopper. Response of native grass vegetation has been greater on sprayed and chopped areas than on the plowed areas. It appears that seeding is necessary following the root plowing. Plowed areas are subjected to more erosion hazards than the spraying or brush cutting.

The Soil Conservation Service in New Mexico reports their conclusions that root plowing is too costly for clearing brush other than for special purposes such as (1) tree planting areas; (2) land to be used for cropland or special crops of high income; (3) areas of high rainfall - 18-20 inches.

ARS and Bureau of Indian Affairs report successful root plow of projects on the Jornada area in New Mexico. ARS suggests that instead of using fins on the rootplow blades - sweeps that would not only kick out the roots of the shrubs, but also leave furrows for seeding be used. Under the hot, arid conditions in this area, it is imperative to seed in protected areas; seeding on level ground, without cover, is nearly always doomed to failure.

The Bureau of Indian Affairs reported on work on the Indian reservations in Arizona. Costs for this job averaged about \$15 per acre.

The Committee reports an overall observation:

1. The root plow leaves a fluffy seedbed, and a considerable amount of seed is lost by being buried too deeply - thus the need for the high seeding rate. It is recommended that an effort should be made to devise an attachment to lightly pack or roughly distribute the soil immediately behind the plow knife and in front of the seeder mechanism.
2. Suggests individually suspended rubber tires the width of the blade or perhaps a set of 2 in tandem might be feasible. Refer to AEDC for consideration.

#### Operating Hints and Service Manual Handbook Report.

Subcommittee Chairman - A. C. Hull

Four committee assignments:

1. Range Seeding Handbook - Types of equipment with recommendations as to where useful. Revised in January 1957 and 2,020 copies distributed to agencies:

|      |       |            |     |
|------|-------|------------|-----|
| FS   | 1,000 | BIA        | 150 |
| BLM  | 300   | Ext. Serv. | 150 |
| ASCA | 300   | SCS        | 100 |
|      |       | ARS        | 20  |

The Superintendent of Documents still has a supply. Cost was about 30¢; selling price is \$1.25.

2. Operating Hints - Field use, servicing, and storage of machinery. Four thousand copies printed and distributed March 1961. Cost 5.6¢ cents per copy.
3. Service Manuals with Parts List - Maintenance and servicing, mainly in shops. Commercial manuals will be used where available. Manuals will be prepared for newly developed equipment.
  - a. Brushland Plow Manual - Two hundred copies were printed and issued through Arcadia during 1961. If there is further demand, this manual can be reprinted.
  - b. Rangeland Drill Manual - Partially completed at Arcadia during 1962. It is hoped that it will be available during 1963. We need estimates of agency needs before printing.
4. Revision of Portions of the Equipment Handbook.
  - a. Transportation Equipment - Section I of the Range Seeding Equipment Handbook. This was revised during 1960 by the Transportation Subcommittee and distributed at the Salt Lake City meeting. About 500 copies are still available from the Forest Service, Washington 25, D. C.
  - b. Rangeland Drills, part of Section D of the Range Seeding Equipment Handbook. This was revised during 1962 by the Drill Subcommittee. This has been reviewed and is now in mimeograph form and ready for final editing and printing.

Procedures for Revisions - Subcommittees working with specific equipment should prepare revisions for the Handbook. Revisions should come to the Handbook Subcommittee Chairman who will arrange for review and printing.

Printing - This will be handled as a Forest Service Category 2 Handbook. The Committee will furnish the Forest Service all plates, drawings, and material needed for printing. The Forest Service will print the number of copies ordered by each agency. Agencies will handle their own distribution.

As present Handbooks or Manuals need partial or complete revision we will convert to the above system. Therefore, all plates which might be used for reprinting should be sent to the Committee Chairman (Forest Service, Washington 25, D. C.).

Finances - Subcommittees submitting write-ups for printing should include as part of their budget the cost of plates, drawings, and other material needed for printing.

#### Equipment Parts Distribution Report.

By A. B. Evanko for Subcommittee Chairman Everett R. Doman

The Committee reports that the parts stocking and distribution from the Stockton Depot is working relatively well. The use of this facility has increased considerably in C.Y. 1962. Sales increased 308%, stock increased 736%. There are still some problems in connection with the use of this Stockton Depot for parts replacement. The Committee recommends:

1. That the Service Manual and Parts List for the Rangeland Drill be completed. Four hundred copies be printed and Manuals stocked at Stockton after initial distribution by Committee.
2. One hundred more Service Manuals and Parts Lists for the Brushland Plow be printed and stocked at Stockton Depot.
3. Units not already having done so, furnish Forest Service, Region 5, San Francisco, information on machines on hand.
4. Parts lists be revised annually by Stockton Depot and furnished directly to parts customers. Lists to be prepared for insertion in the Service Manuals and Parts Lists to replace superseded lists.

It was brought out by Arcadia representatives and also by Region 5 that some units are ordering either through Arcadia or Region 5 rather than following the recommended procedures of sending their orders directly to Stockton. This is a matter of communication within the agencies, and should be handled by agency representative to make certain that their people process their requisitions directly to the Stockton people. This will also prevent delay in delivery of parts required.

#### Report on tests and investigations of Browse Seed Collector, including portable types.

By Charles Howard for Subcommittee Chairman William Dasmann.

This report discussed the vehicle-mounted Browse Seed Collector and the investigating work on the small one-man Collector mounted on a trail-scooter.



The Development Center has designed and constructed a 3-man operated vacuum type browse seed collector suitable for mounting on a Willys jeep or International Scout. The collection of seed with 2 6-inch hoses, 20 feet long on supporting swinging booms. The ducts run into a collection separator on the truck. The total weight of the unit is 675 pounds, and the approximate construction cost is \$1300. Field trials are necessary and are now planned for operation of this completed unit.

Considerable problems have developed in connection with the one-man or portable seed collecting unit. The Arcadia Center at this time recommends deferment of further work on the one-man browse seed collector until after the truck-mounted unit is field tested. They recommend smaller hoses to determine production rates and verify operational problems. They want to investigate compact hi-speed fans. They also want to determine seed damage after seed has passed through these hi-speed fans and determine if the damage is acceptable.

Report on performance tests and recommendations for improvements of Browse Planter.

Subcommittee Chairman - Perry Plummer

The machine has been fully operational this past year. It was checked out by the Arcadia Equipment Development Center and field tested in a wide variety of conditions in California, Idaho, Arizona and Utah. The machine was reported to have functioned well in all these areas, except for minor points. Mr. Walter Hansen, the builder of the machine, of Ephraim, Utah, is now ready to manufacture a complete seeder for the price of \$570, FOB, Ephraim, Utah. The weaknesses which developed in the field tests this past year will be corrected on the new models.

The Committee reports that considering the wide variety of soil conditions on which the machine has been tested it is generally agreed that this is a highly versatile seeder that will plant most any seed over a wide range of site conditions. No doubt there will be opportunities to adapt the machine to other uses.

Report on performance, accomplishment tests and evaluation in hard brush of both Front End and Towed Brush Cutter.

Subcommittee Chairman - William Malencik. Report presented by A. B. Evanko and George Nordstrom.

The Front End Brush Cutter was not operational this past year.

The Trailing Unit was tested on the Morongo Indian Reservation. The Cutter was towed with a D-4 equivalent. Generally no difficulty was experienced operating the Cutter on side slopes approaching 30%. On such slopes, however, the operator chose to work up and down slope.



Production in the chamise type was greater than in the water-wally type - approximately 2 acres per hour. Cutting results were considered satisfactory. Cutting costs for the project averaged about \$15 per acre.

On the San Bernardino Forest approximately 30 acres of a mixed brush type were treated. A D-4 tractor was used to tow the cutter - no difficulty was experienced.

Accomplishment with cutter height at about 5 inches was poor. The feasibility of using the cutter to encourage sprouting of decadent brush plants was the objective in another phase of the test. Using a cutting height of about 2 inches, an average of approximately 3 acres per hour was treated. Stand density might be considered comparable to light to medium dense when operating at this cutting height.

Personnel working with the unit were of the opinion that a treatment cost of \$5 per acre under their conditions was realistic.

On the Shasta-Trinity National Forest, approximately 30 acres of a light to medium mixed brush were treated. The cutter was towed with TD-9. Forest personnel report that the cutter operated equally well on all slopes. Treatment costs averaged about \$12 to \$15 per acre.

The Subcommittee offers the following improvement suggestions:

1. Install cutter-motor protective shields.
2. Investigate possibilities of reducing hazard from flying pieces of brush.
3. Reinforce cutter radiator mounting.
4. Provide a more positive locking device for cutter blade bolts.
5. Consider hinged-type drawbar or other means to facilitate transport of cutter.

#### Brush Cutter-Chipper Investigations Report.

Subcommittee Chairman - A. B. Evanko

The Arcadia Development Center investigated a number of existing machines. These machines are grouped under five operating principles.

1. Heavy rolling cylinder with cutting blade or grousers.
2. Shredding machines. The shredding machines investigated were the Ladig Brush Shredder.
3. Flail machines. The flail machine investigated was the American Steel Dredge Company machine called the Bushwacker.

4. Mowing machines. Northwest Motor Company's Roadside Brush Mower which incorporates the 7-foot chain-saw blade as a cutting bar was studied. They also looked into the principles of the various hay-mowing machines and swathers.
5. Large chippers. There were several large, custom-built chipping machines in operation. The Admoore Unit, a self-propelled, self-feeding chipping unit, was one of the most promising. This machine will take 11" diameter material that was developed to dispose of orchard pruning. The fee for its use now is approximately \$12 per acre in orchard use. Initial cost of this unit is approximately \$30,000 with weight of about 18,000 pounds.

The comments on the operating of principles by AEDC are as follows:

Rolling cylinder principle has been used for some time. On some lands it has performed well but does not meet the requirements desired on a great many areas.

The shredding machine principle appears to have possibilities but may be a costly machine to build.

The flail machine on a heavy carriage may be able to destroy 6" material but would not leave all pieces as small as 2".

The mowing machine will only cut the brush.

The large chipper units require precut material. The one-man single pass mowing machine chipper unit appears to meet the requirements of the project but would be a one-purpose machine.

#### Final report on modifications and testing of Oregon Press Seeder.

Subcommittee Chairman - Howard DeLano

A set of drawings of the Oregon Press Seeder incorporating feasible changes as suggested by the field were prepared and distributed by Arcadia Development Center for comment.

It was the general opinion that the design of the seed tubes, seed tube springs and drags still remains somewhat of a problem.

It is felt that the weight boxes are not needed, and if needed could be added by the local user.

The design of the gear chain assembly has been improved. There is still some concern that there is a need to provide for a chain adjustment and provide further protection for the assembly. Earlier models had excessive wear of the gear assembly through use.

The design of the wheel, wheel frames and wheel assemblies has been improved by Arcadia. Recognition has been made of the need for some alteration in the design of the spring mountings and hitch.

Generally these improvements can be incorporated in the present models in use. The need for the Oregon Press Seeder has been lessened by some change in the treatment method of seeding on dry, loose seedbeds. There has been an increase in chemical spraying of brush followed by seeding with the Rangeland Drill, rather than plowing and seeding with the Oregon Press Seeder.

It is recommended that this subcommittee be discontinued at this time. It can be reactivated if a further need develops. However, it is recommended that Arcadia should complete the present drawings using the best available information. Any revisions of drawings at this time should be held to a minimum.

Howard DeLano's report, "Use of the Oregon Press Seeder", on the Big Springs Ranger District, Kaibab National Forest, during the summer of 1962.

This report indicated that the Oregon Press Seeder is a desirable piece of equipment for rangeland seeding. The basic design is good, and only a few minor revisions may be necessary to strengthen the design and minimize operational breakdowns.

Final Report on Broadcast Seeder. Eugene Silva reported that they are still waiting developments on electric motors and that further work had not been done on the Broadcast Seeder. No report was made.

Final Report on Hitches.

Subcommittee Chairman - Orval Winkler

Orval Winkler reported that the Hitches proposed that have proven to be acceptable have been submitted to the Handbook Committee, and that all Hitches now have been designed and submitted for publication. The new two-drill Hitch developed at Vale, Oregon, and used on that project this past summer, was submitted with drawing and photograph for inclusion in the Range Seeding Equipment Handbook.

The vertical lift Hitches have also been prepared for review and final action by the Handbook Committee.

Aerial Application.

Subcommittee Chairman - Donald H. Euler

This Subcommittee attempted to summarize information with regard to Aerial Application throughout the West. What is new in aerial application resulted in discussion on the Stull Chemical Company's device known as a "bi-fluid system". This is a break-through - the system



eliminates the problems with regard to invert emulsions and spray applications which caused trouble in the past. This system operates on the principle of instantaneous formation of the invert emulsion by means of a mixing and proportioning nozzle. The equipment consists of separate tanks and pump systems for oil and water phases. There is no pre-mixing of herbicide, oil, and water ingredients. The mixing occurs in the patent nozzle.

This was demonstrated in a field demonstration in Albuquerque in December 1962.

The Committee reported that to date the use of dyes in spray mixtures has not been too successful. They find no information on the successful application of dyes.

#### Report on Performance of Ground Spraying Equipment.

Subcommittee Chairman - A. B. Evanko

Tanks were redesigned, capacity reduced to 75 gallons each, and remounted on the outside of the tracks at a lower level than previously.

Figure 2. The hose reel was moved to the rear of the tractor. Several other minor changes were also made.

In June, the unit was tested in a big sagebrush-rabbitbrush type as a phase of a going project. Slopes were variable and did not exceed about 20% gradient.

The major difficulty experienced in this test was clogging of the tractor radiator by a mixture of dust and spray. This condition had not been experienced heretofore and may have been caused by the particular soil type (a loose, very sandy loam) at this location. Since the test, AEDC has designed a radiator shroud to draw cooling air from a higher level in an attempt to correct the clogging problem.

Nozzle clogging from scale was also a perennial problem throughout the test. Difficulty from this source had not been experienced previously and may have been the result of incomplete draining of the system when not in use. Failure to clean filter screens regularly may also have been a contributing factor. In any event, AEDC has equipped the unit with a stainless steel boom which should reduce boom-bending problems as well as those from clogging.

Pump alignment difficulty was corrected by replacing a bent pump shaft. Based on use, the selector valve on the supply line to the boom is to be replaced with a simple shut-off valve. Each section of the boom will be similarly equipped. Thus, it will be necessary for the operator to make boom changes manually while the tractor is stopped. However, changes are made so infrequently that it was the opinion of field



personnel that the individual valves would be less troublesome than the selector valve. The hose supply line will also have an individual shut-off valve.

Spray unit specifications and drawings by AEDC are two-thirds complete. The need for modification indicated by this year's tests has delayed completion.

#### Recommendations

1. Early completion of specifications and drawings to enable purchase of additional units in time for next season's spraying activity.
2. Continued performance testing to determine adequacy of modifications made since tests in 1962 and to discover any other "bugs".
3. Provide field units with instructions and/or supervision for mounting spray units on tractors (TD-340, JD-440 and 1010).

#### Report on Chemical Plant Control.

Subcommittee Chairman - Donald R. Cornelius

Donald R. Cornelius reported on plans of this Committee to revise present Handbook on Chemical Plant Control. This will include additional information which is now available on species already covered in the present Handbook as well as all available material on several new species. The Subcommittee Chairman listed a number of species on which there is now work available and which would be included in the revision of the new Handbook.

#### Report from Exploratory Committee and Technical Services.

Subcommittee Chairman - John R. Killough

John R. Killough reported that his Committee had contacted agencies and individuals in an attempt to find out and establish areas where new work by this Committee could and should be done. Response to this inquiry this year was very poor. The only two proposals for new projects were: (1) the interseeder; (2) the tractor hydraulic lift for the Rangeland Drill.

Eugene Silva reported on the new technical services approach by the Arcadia Development Center this past year, and the employment of a Forest Engineer to get acquainted with equipment problems on the going projects. The Engineer's first trip to the Vale, Oregon, project resulted in change of specifications on drills which resulted in considerable savings to the BLM on its new drills. This one act, in the opinion of Committee members, more than paid for the man's time.

Further field trips by the Forest Engineer are scheduled between now and the end of the fiscal year. It is hoped that he will get into the field to check on the new equipment when it arrives on the projects this spring. It is also hoped that he will initiate new ideas for projects and equipment in the Range Reseeding Equipment area.

#### 1963 Project Assignments.

The group consideration of project write-ups for 1963 as submitted by Subcommittee Chairmen, a financial review of the current programs for the next fiscal year and priority assignments were discussed. The following assignments were made to Subcommittees. In all cases the Subcommittee Chairman is being sent a copy of the proposed work plan for his Committee for the following year.

Plastic Pipelines, TEB No. 1223. Work sheet attached as prepared by Subcommittee and approved by the entire Committee. This will be the work plan for C.Y. 1963.

Fence Building Equipment, TEB No. 1221. Work sheet attached as prepared and approved by the entire Committee. This will be the work plan for C.Y. 1963.

Evaluation of Root Plows, no TEB number. Work sheet attached as prepared by Subcommittee and approved by the entire Committee. This will be the work plan for C.Y. 1963.

Operating Hints and Service Manual Handbook. Work sheet attached as prepared by Subcommittee and approved by the entire Committee. This will be the work plan for C.Y. 1963.

As this Committee contemplates considerable activity this next year which involves all agencies, agency assignments as approved by the Committee on February 13, 1963, will be sent direct to Subcommittee members by A. C. Hull.

Equipment Parts Distribution Report. Subcommittee to be discontinued. Region 5 will prepare a report for the entire Committee to be presented in 1964.

Browse Seed Collection Equipment, TEB No. 1010. Work sheet attached as prepared by Subcommittee and approved by the entire Committee. This will be the work plan for C.Y. 1963.

Report on Browse Seeder, TEB No. 502. Work sheet attached as prepared by Subcommittee and approved by the entire Committee. This will be the work plan for C.Y. 1963.

Report on Front Mounted and Trailer Brush Cutters, TEB No. 501. Work sheet attached as prepared by Subcommittee and approved by the entire Committee. This will be the work plan for C.Y. 1963.

Report on Brush Cutter and Chipper Equipment, TEB No. 1222. Work sheet attached as prepared by Subcommittee and approved by the entire Committee. This will be submitted to TEB for consideration as a multi-functional project. Subcommittee will be notified of results and/or modifications at a later date.

Report on Oregon Press Seeder, TEB No. 1101. Subcommittee to be discontinued as of this meeting. Arcadia Equipment Development Center will continue the work proposed in attached work plan. This is to be completed by July 1963, and a report submitted by AEDC.

Development of Broadcast Seeder. Subcommittee to be discontinued. Arcadia will prepare a final report and present at next meeting.

Development of Hitches. Subcommittee is discontinued. Work has been completed and submitted to Handbook Committee, except for the drawings of the Rangeland Drill Hitch, developed on the Vale, Oregon, project. Arcadia will produce drawings and submit to Handbook Committee. No report scheduled in 1964.

Aerial Application. Work sheet attached as prepared by Subcommittee and approved by the entire Committee. This will be the work plan for C.Y. 1963.

Report on Ground Spraying Equipment, TEB No. 704. Work sheet attached as prepared by Subcommittee and approved by the entire Committee. This will be the work plan for C.Y. 1963.

Report on Chemical Plant Control. Subcommittee report attached. This will be work plan for C.Y. 1963.

#### New Project Proposals.

The Interseeder was accepted by the Committee as a new project. TEB number will be assigned once this gets into the area of technical equipment. This year's work plans do not anticipate anything from Arcadia on this Committee.

Tractor Mounted Drill Project. This project is approved by the full Committee; work plan as submitted approved. Work sheet attached.

#### Old Project Proposals.

035 Rangeland Drill, 328 Brushland Plow. These Subcommittees are being combined to provide for finalizing work with Arcadia on these two pieces of equipment. Work plan as approved attached.



COMMITTEE ACTION PROPOSALS

| TEB#  | PROJECT                                       | OTHER         | <u>FUNDS PROPOSED</u> |                         |
|-------|-----------------------------------------------|---------------|-----------------------|-------------------------|
|       |                                               |               |                       | ARCADIA                 |
| 1223  | Pipe Laying Machinery                         | -             |                       | \$1,000                 |
| 1221  | Fence Building Equipment                      | \$1,000 - R-4 |                       | 500<br>(travel & eval.) |
| 035   | Rangeland Drill                               | -             |                       | 1,500                   |
| 323   | Brushland Plow                                | -             |                       | 1,500                   |
| 1010  | Browse Seed Collector                         | -             |                       | 4,000                   |
|       | Second phase                                  | -             |                       | 1,800                   |
| 502   | Browse Seeder (Hanson)                        | 250 - R-4     |                       | 300                     |
| 501   | Towed Brush Cutter (Front-end Model)          | -             |                       | 1,500                   |
| 1222  | Brush Cutter & Chipper                        | -             |                       | 13,500                  |
| 704   | Ground Spraying Equipment                     | -             |                       | 3,000                   |
| 1029  | Technical Services - (Engineer<br>at Arcadia) | -             |                       | 7,000                   |
|       | Tractor Mounted Drill                         | -             |                       | 4,000                   |
| Total |                                               |               |                       | \$39,600                |

The above proposals have been submitted to Technical Equipment Board, with the exception of TEB #1222. This project is being submitted as a Multiple-Use Project; therefore, the Range Reseeding Equipment budget for F.Y. 64 will be \$26,100 - \$12,000, BLM; \$1,000, BIA; \$13,100, FS.



ARCADIA EQUIPMENT DEVELOPMENT CENTER  
RANGE RESEEDING PROGRAM

as of

January 31, 1963

| ED&T#  | PROJECTS               | AUTH.    | OBLIG.      | BAL.        |
|--------|------------------------|----------|-------------|-------------|
| 501 -  | Brush Cutter           | \$ 1,000 | \$ 580.09   | \$ 419.91   |
| 502 -  | Browse Seeder          | 390      | 560.46      | 170.46      |
| 702 -  | Trencher & Furrower    | 780      | 8.48        | 771.55      |
| 704 -  | Ground Spray Equipment | 3,400    | 2,103.16    | 1,296.84    |
| 1010 - | Browse Seed Collector  | 4,410    | 3,913.27    | 496.73      |
| 1029 - | Technical Services     | 6,570    | 3,904.74    | 2,665.26    |
| 1101 - | Oregon Press Seeder    | 3,100    | 1,214.00    | 1,886.00    |
| 1221 - | Fencing Machine        | 390      | 29.94       | 360.06      |
| 1222 - | Brush Cutter Chipper   | 3,090    | 1,268.45    | 1,821.55    |
| 1223 - | Plastic Pipe           | 2,170    | 805.39      | 1,364.61    |
| Total  |                        | \$25,300 | \$14,387.95 | \$10,912.05 |

SUBCOMMITTEE ASSIGNMENTS FOR FY 1964

Operating Hints and Service Manual Handbooks Subcommittee

|                      |     |                     |
|----------------------|-----|---------------------|
| A. C. Hull, Chairman | ARS | Logan, Utah         |
| Paul Howard          | BIA | Washington, D. C.   |
| John R. Killough     | BLM | Washington, D. C.   |
| Don Atkins           | SCS | Denver, Colorado    |
| E. E. Silva          | FS  | Arcadia, California |
| Henry Mullins        | FS  | Albuquerque, N. M.  |
| Fred Pratt           | SCS | Washington, D. C.   |

Plastic Pipe-laying Machine Subcommittee

|                           |     |                      |
|---------------------------|-----|----------------------|
| Robert Anderson, Chairman | BLM | Salt Lake City, Utah |
| Joe V. Chiarella          | BIA | Phoenix, Arizona     |
| William Evans             | FS  | Missoula, Montana    |

Fence Building Machine Subcommittee

|                         |     |                  |
|-------------------------|-----|------------------|
| Orval Winkler, Chairman | FS  | Ogden, Utah      |
| Maurice W. March        | BLM | Boise, Idaho     |
| Charles Waldron         | FS  | Portland, Oregon |

Root Plow Subcommittee

|                      |     |                         |
|----------------------|-----|-------------------------|
| Carl Fonte, Chairman | SCS | Colorado Springs, Colo. |
| Donald H. Euler      | FS  | Denver, Colorado        |
| Morris Tragstad      | BLM | Sante Fe, New Mexico    |
| Fred Lavin           | ARS | Tempe, Arizona          |

Browse Seed Collection Equipment Subcommittee

|                                              |          |                       |
|----------------------------------------------|----------|-----------------------|
| William Dasmann, Chairman                    | FS       | San Francisco, Calif. |
| Charles Howard                               | FS       | Arcadia, California   |
| R. N. Denny, Colorado Fish & Game Dept.      |          | Fort Collins, Colo.   |
| Wally McGregor, California Fish & Game Dept. |          | Sacramento, Calif.    |
| Perry Plummer                                | FS       | Ephraim, Utah         |
| Eanor C. Nord                                | FS (PSW) | Berkeley, California  |
| Walter Hanson                                | FS       | Washington, D. C.     |

Browse Seeder Subcommittee

|                                               |     |                        |
|-----------------------------------------------|-----|------------------------|
| Perry Plummer, Chairman                       | FS  | Ephraim, Utah          |
| Richard Hubbard                               | FS  | Berkeley, California   |
| A. B. Evanko                                  | FS  | San Francisco, Calif.  |
| Hugh Harper, Idaho Fish & Game Dept.          |     | Boise, Idaho           |
| Walter McGregor, California Fish & Game Dept. |     | Sacramento, Calif.     |
| Lawrence Riordan, Colorado Fish & Game Dept.  |     | Denver, Colorado       |
| Norman Hancock, Utah Fish & Game Dept.        |     | Salt Lake City, Utah   |
| George Burma                                  | BLM | Sacramento, California |
| D. H. Euler                                   | FS  | Denver, Colorado       |
| Walter Hanson                                 | FS  | Washington, D. C.      |

Brush Cutting and Brush Beating Equipment Subcommittee

|                               |     |                       |
|-------------------------------|-----|-----------------------|
| George T. Nordstrom, Chairman | BIA | Sacramento, Calif.    |
| A. B. Evanko                  | FS  | San Francisco, Calif. |
| Carl Rice                     | BLM | Sacramento, Calif.    |

Brush Cutter & Chipper Subcommittee

|                        |     |                         |
|------------------------|-----|-------------------------|
| A. B. Evanko, Chairman | FS  | San Francisco, Calif.   |
| W. F. Currier          | FS  | Albuquerque, New Mexico |
| Carl Rice              | BLM | Sacramento, Calif.      |
| George Nordstrom       | BIA | Sacramento, Calif.      |

Aerial Application Subcommittee

|                       |     |                    |
|-----------------------|-----|--------------------|
| D. H. Euler, Chairman | FS  | Denver, Colorado   |
| William Evans         | FS  | Missoula, Montana  |
| Orval Winkler         | FS  | Ogden, Utah        |
| Leroy Sweet           | BLM | Denver, Colorado   |
| Warren Sondau         | BLM | Portland, Colorado |

Ground Spraying Equipment Subcommittee

|                        |     |                       |
|------------------------|-----|-----------------------|
| A. B. Evanko, Chairman | FS  | San Francisco, Calif. |
| George T. Nordstrom    | BIA | Sacramento, Calif.    |
| Charles Waldron        | FS  | Portland, Oregon      |
| Fred Davis             | BLM | Sacramento, Calif.    |
| Roger L. Kirkham       | FS  | Springfield, Missouri |

Chemical Plant Control Subcommittee

|                                          |     |                      |
|------------------------------------------|-----|----------------------|
| Donald R. Cornelius, Chairman            | ARS | Berkeley, California |
| Don Hyder                                | ARS | Fort Collins, Colo.  |
| Fred Tscherley                           | ARS | Tucson, Arizona      |
| Clair Lotson                             | BLM | Cheyenne, Wyoming    |
| W. C. Robacker                           | ARS | Reno, Nevada         |
| Lowell K. Halls                          | FS  | Nocogdoches, Texas   |
| Hurlon Ray                               | SCS | Albuquerque, N. M.   |
| Donald Hervey, Colorado State University |     | Fort Collins, Colo.  |

New ProjectsInterseeder Subcommittee

|                      |     |                        |
|----------------------|-----|------------------------|
| Ralph Cole, Chairman | SCS | Rapid City, So. Dakota |
| Charles Waldron      | FS  | Portland, Oregon       |
| Robert Martin        | BLM | Boise, Idaho           |
| Cordon Powers        | BIA | Aberdeen, So. Dakota   |
| William Evans        | FS  | Missoula, Montana      |

Tractor-Mounted Drill

|                                              |     |                       |
|----------------------------------------------|-----|-----------------------|
| W. F. Currier                                | FS  | Albuquerque, N. M.    |
| Joe Chiarella                                | BIA | Phoenix, Arizona      |
| Henry Mullins                                | FS  | Albuquerque, N. M.    |
| Lawrence Riordan, Colorado Game & Fish Dept. |     | Denver, Colorado      |
| A. B. Evanko                                 | FS  | San Francisco, Calif. |
| Robert Anderson                              | BLM | Salt Lake City, Utah  |

Rangeland Drill - Brushland Plow Subcommittee

|                        |     |                       |
|------------------------|-----|-----------------------|
| A. B. Evanko, Chairman | FS  | San Francisco, Calif. |
| Henry Mullins          | FS  | Albuquerque, N. M.    |
| W. F. Currier          | FS  | Albuquerque, N. M.    |
| Howard DeLano          | BLM | Portland, Oregon      |

Exploratory Subcommittee

|                                              |     |                       |
|----------------------------------------------|-----|-----------------------|
| John R. Killough, Chairman                   | BLM | Washington, D. C.     |
| A. B. Evanko                                 | FS  | San Francisco, Calif. |
| Graham Rice                                  | BIA | Portland, Oregon      |
| A. C. Hull                                   | ARS | Logan, Utah           |
| B. W. Allred                                 | SCS | Washington, D. C.     |
| Lawrence Riordan, Colorado Game & Fish Dept. |     | Denver, Colorado      |
| Hurlon Ray                                   | SCS | Albuquerque, N. M.    |



U. S. DEPARTMENT OF AGRICULTUREAgricultural Research Service

|                     |                                             |
|---------------------|---------------------------------------------|
| Russell J. Lorenz   | Box 459, Mandan, North Dakota               |
| D. N. Hyder         | South Hall, C.S.U., Fort Collins, Colo.     |
| Wesley Keller       | Plant 2nd Sta., Beltsville, Maryland        |
| Robert E. Bement    | 272 South Hall, C.S.U., Fort Collins, Colo. |
| Donald R. Cornelius | P.O. Box 245, Berkeley, California          |
| Fred Lavin          | P.O. Box 858, Mesa, Arizona                 |
| George A. Rogler    | P.O. Box 459, Mandan, North Dakota          |
| A. C. Hull, Jr.     | Crops Research Lab., Logan, Utah            |
| Forrest A. Sneva    | Box 833, Burns, Oregon                      |

Forest Service

|                     |                                         |
|---------------------|-----------------------------------------|
| Orval E. Winkler    | Ogden, Utah                             |
| Walter O. Hanson    | Washington 25, D. C.                    |
| Richard S. Driscoll | Washington 25, D. C.                    |
| Gilbert Duran       | Box 924, Taos, New Mexico               |
| H. A. Mullin        | Albuquerque, New Mexico                 |
| William Currier     | Albuquerque, New Mexico                 |
| Charles Waldron     | Portland, Oregon                        |
| William L. Evans    | Missoula, Montana                       |
| Eugene E. Silva     | 701 N. Santa Anita, Arcadia, California |
| Charles Howard      | 701 N. Santa Anita, Arcadia, California |
| D. C. Stevens       | 707 Barfield Bldg., Amarillo, Texas     |
| R. M. DeNio         | Washington 25, D. C.                    |
| Avon Denham         | Portland, Oregon                        |
| A. B. Evanko        | San Francisco, California               |
| Ray Ward            | Alturas, California                     |
| A. Perry Plummer    | Ephraim, Utah                           |
| Pat O. Currie       | Fort Collins, Colorado                  |

Soil Conservation Service

|                      |                                         |
|----------------------|-----------------------------------------|
| Lawrence K. Sandoval | Santa Fe, New Mexico                    |
| Howard B. Passey     | Denver 25, Colorado                     |
| Ralph M. Bell        | 806 Rio Vista St., Santa Fe, New Mexico |
| Hurlon Ray           | P.O. Box 1348, Albuquerque, New Mexico  |
| B. W. Allred         | Washington 25, D. C.                    |
| Ernest Snook         | 307 N. Atkinson, Roswell, New Mexico    |
| Jack Chugg           | 307 N. Atkinson, Roswell, New Mexico    |
| Robert Abercrombie   | Santa Fe, New Mexico                    |
| Ivan Dodson          | 2301 Calle de Suenos, Las Cruces, N. M. |
| Carl Fonte           | Box 4126, Colorado Springs, Colorado    |
| Waldo R. Frandsen    | Salt Lake City, Utah                    |

Cooperative State Experiment Station Service

|                  |                      |
|------------------|----------------------|
| Thomas Ronningen | Washington 25, D. C. |
|------------------|----------------------|

Agricultural Stabilization and Conservation Service

Fred J. Pratt Washington 25, D. C.

Rural Areas Development

George E. Bradley Washington 25, D. C.

U. S. DEPARTMENT OF THE INTERIORBureau of Indian Affairs

|                     |                                         |
|---------------------|-----------------------------------------|
| Graham Rice         | 1001 N.E. Holladay, Portland, Oregon    |
| George T. Nordstrom | P.O. Box 749, Sacramento 4, California  |
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| E. G. Jackson       | Billings Area Office, Billings, Montana |
| Joseph V. Chiarella | Phoenix, Arizona                        |
| Gordon Powers       | 820 S. Main, Aberdeen, South Dakota     |
| Paul L. Howard      | Washington 25, D. C.                    |

Bureau of Land Management

|                    |                                     |
|--------------------|-------------------------------------|
| John R. Killough   | Washington 25, D. C.                |
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Colorado Game & Fish Department

|                  |                           |
|------------------|---------------------------|
| Lawrence Riordan | Box 720, Denver, Colorado |
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University of Arizona

|                   |                                               |
|-------------------|-----------------------------------------------|
| Gilbert L. Jordan | Dept. Watershed Mgt., U. of A., Tucson, Ariz. |
|-------------------|-----------------------------------------------|

Colorado State University

|                  |                               |
|------------------|-------------------------------|
| Donald L. Hervey | R. M., Fort Collins, Colorado |
|------------------|-------------------------------|

Texas Technological College

|                |                                |
|----------------|--------------------------------|
| John R. Hunter | Agronomy Dept., Lubbock, Texas |
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Texas A&M

|                  |                        |
|------------------|------------------------|
| Wayne G. McCully | College Station, Texas |
|------------------|------------------------|

Montana State University

|              |                                       |
|--------------|---------------------------------------|
| M. S. Morris | School of Forestry, Missoula, Montana |
|--------------|---------------------------------------|

Miscellaneous Equipment Company Representatives

|                  |                                                             |
|------------------|-------------------------------------------------------------|
| Robert A. Ronald | Rust Tractor Co., P.O. Box 1320,<br>Albuquerque, New Mexico |
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